

SAN[®] Electro Heat Process **HEATING**



Fluid Heating Systems

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Member of the NIBE Group

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Electro Heat

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4. FLUID HEATING SYSTEMS

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Heating batteries

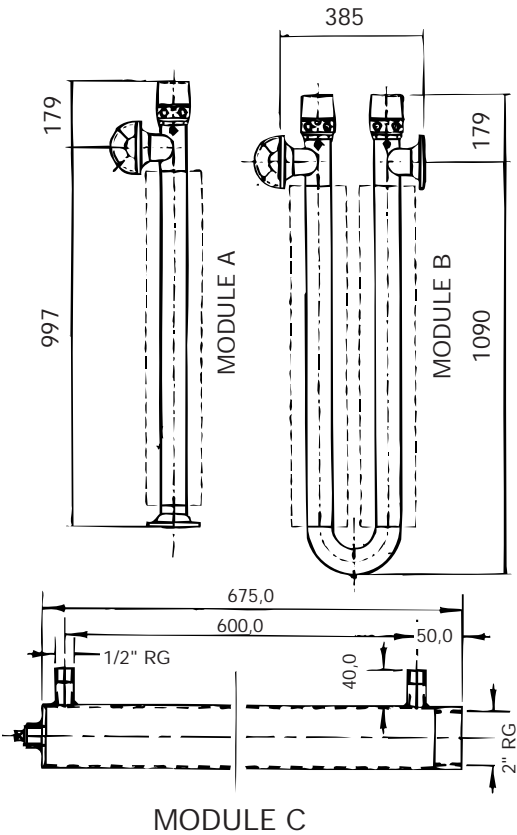
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FLOW MODULES



The **SAN** flow modules are used for building of an electrical heating system, which considers demands on flexibility, power and space utilization.

The modules A, B and C are available in normal steel or in stainless steel and can have an immersion heater type B, type BRC or type BO mounted, according to the media to be heated. The immersion heaters can be equipped with thermostat and limiter.

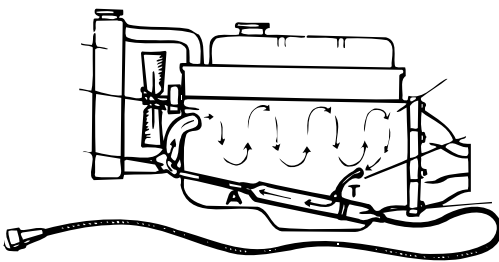
The modules A and B in stainless steel (AISI 316) have flange connections according to DIN 2633 (PN16, DN50).

In normal carbon steel the modules are delivered according to DIN 2631 (PN6, DN50).

Module C has a 1/2" connection. Insulation can be made.

Type	Part no.
MODULE A, normal steel	30134
MODULE A, acid proof, s.s., Werkst. no. 1.4435	S 125504
MODULE B, normal steel	30135
MODULE B, acid proof, s.s., Werkst. no. 1.4435	S 124062
MODULE C, normal steel	30140
MODULE C, acid proof, s.s., Werkst. no. 1.4435	30142
Welding flange for module A and B, steel	41141
Welding flange for module A and B, stainless steel	41152
Bolting set with gasket for A and B, steel	30960
Bolting set with gasket for A and B, stainless steel	30965

FLOW HEATER Double insulated



The **SAN Q-heater** is a flow heater especially designed for heating of the cooling water in various engines, mobile and stationary, e.g. to avoid cold start or as frost protection. However, the Q-heater naturally also can be used for many machinery designs. The Q-heater is equipped with connection cable in armoured hose with special plug. A special female plug, suspension fittings and 2 hose clamps are delivered.

The Q-heater is double insulated and therefore requires no earth connection.

Q-heater			230 V
Type	Power W	Dimension Ø D x L mm	Part no.
Q-500	500	50 x 250	79900
Q-1000	1000	50 x 350	79901
Q-2000	2000	50 x 550	79903

The following fittings can be delivered for engine mounting:

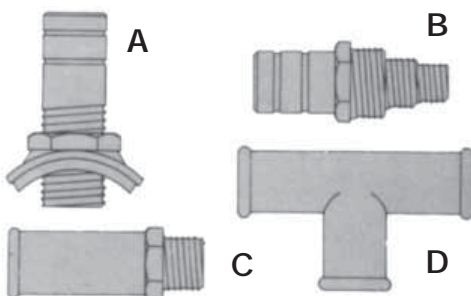


Figure	Hose diameter	Outer diameter	Part no.
A	5/8"	3/8"	79966
B	5/8"	18 mm - 1/4" - 1/8"	79967
C	5/8"	1/2"	79968
C	5/8"	M14 - 1,5	79969
D	5/8"	1/2" - 1/2"	79972
D	5/8"	5/8" - 5/8"	79971

A commonly used flow heater for bigger engine- and machinery heating is the type Q-6000. It is e.g. mounted in busses to avoid cold start and cold cabine.

The Q-6000 is mounted with SAN immersion heater in acid proof, stainless steel, type 10 BRC 60, equipped with terminal box IP 55 with built-in thermostat 5-80°C and 100°C limiter. Needs earth connection.

The Q-6000 is insulated, equipped with outer jacket in stainless steel, mounting pins and 1" in- and outlets.

To obtain a good water circulation in the system we recommend to use a circulation pump.

FLOW HEATER



Type	Power kW	Voltage V	Dim. mm Ø x L	Part no.
Q-3000	3.0	3x400	150 x 800	79870
Q-4500	4.5	3x400	150 x 800	79872
Q-6000	6.0	3x400	150 x 800	79875

The stainless water heater is used for all applications where hygiene is extremely important, e.g. in hospitals, in the food industry and in laboratories.

The water heater is mounted with a stainless immersion heater type BRC and with thermostat 5-80°C, 3-pole as well as limiter 100°C.

The SAN stainless water heaters are manufactured from acid proof, stainless steel AISI 316. All weldings are performed according to the most modern principles. Stainless vessels are only to be used for plants where the chloride content in the circulating water is max. 300 mg/l at 60°C or max. 150 mg/l at 80°C. The vessel is delivered with wall fittings and a pre-insulation of high pressure polyuretan foam, which provides a smooth and hard surface, which can be plastic painted.

STAINLESS WATER HEATER Type VVB

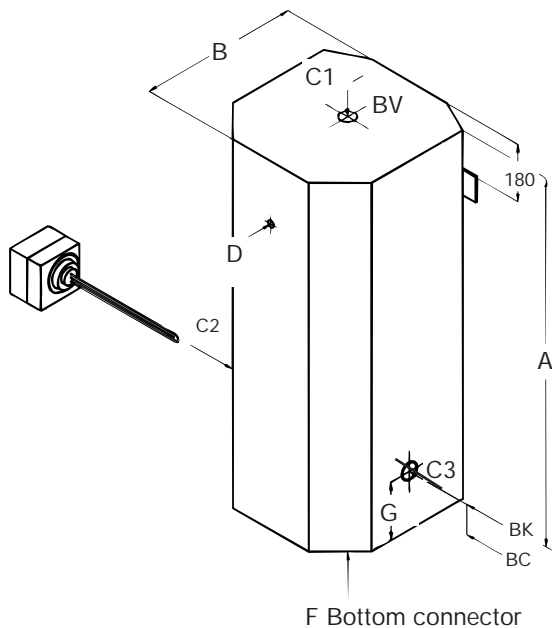
WATER HEATER VVB

3 x 400 V

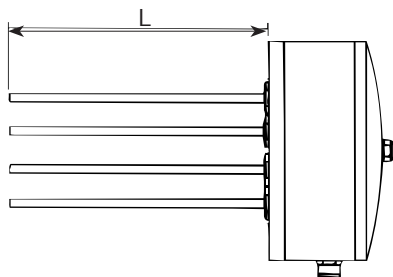
Type	Power kW	Volume L	Part no.
VVB 60	3.0	60	30600
VVB 101	4.5	101	30610
VVB 151	6.0	151	30620

Other dimensions and power can be delivered.

Litre	A	B	C	D	F	G	Weight/kg
60	750	400	2"	1/2"	1 1/4"	818	29
101	850	500	2"	1/2"	1 1/4"	184	43
151	1150	500	2"	1/2"	1 1/4"	184	54



HEATING BATTERY for water heating etc.

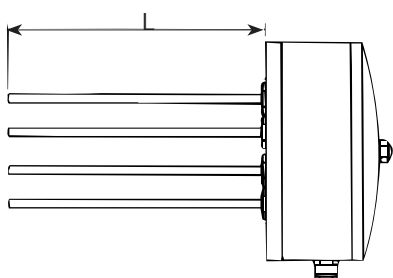


The SAN electrical heating battery type VBFV is for flange mounting and especially applicable for water heating. The DS-flange DIN 2527B, PN16 is mounted with SAN stainless tubular heating elements type uzv and equipped with galvanized terminal box and built-in thermostat 25-90°C as well as limiter 100°C, with manual reset.

Protection class: IP 22.

VBFV		3x400 V		5 W/cm ²	
Type	Power kW	Group division	Flange Ø mm	Insertion depth mm	Part no.
VBFV 10	9.6	4.8-4.8	340 DN200	860	30850
VBFV 15	14.5	4.8-9.7	340	860	30852
VBFV 20	19.4	9.7-9.7	340	860	30854
VBFV 30	30.0	12-18	340	860	30856
VBFV 48	48.0	12-18-18	460 DN 300	1010	30858
VBFV 72	72.0	12-24-36	460	1010	30860

HEATING BATTERY for oil heating etc.



TYPE VBFO

The SAN electrical heating battery type VBFO is for flange mounting and especially applicable for heating of fuel-oils. The DS-flange DIN 2527B, PN16 is mounted with stainless tubular heating elements type lzv and equipped with galvanized terminal box with built-in thermostat 30-100°C and limiter 140°C with manual reset.

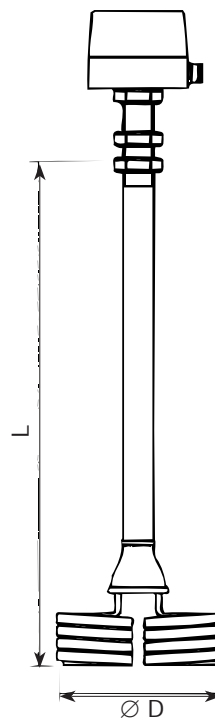
Protection class: IP 22.

VBFO		3x400 V		3 W/cm ²	
Type	Power kW	Group division kW	Part no.		
VBFO 27	L = 670	D^Ø = 340 mm	DN200 PN16		
VBFO-27/1	6.75	2.25-4.50	30911		
VBFO-27/2	11.25	4.50-6.75	30912		
VBFO-27/3	18.00	4.5-6.75-6.75	30913		
VBFO-27/4	22.50	6.75-6.75-9.00	30914		
VBFO-27/5	27.00	6.75-9.00-11.25	30915		
VBFO	L = 1010	D^Ø = 340 mm	DN200 PN16		
VBFO-45/1	31.50	4.50-9.00-18.00	30921		
VBFO-45/2	38.25	6.75-13.6-18.00	30922		
VBFO-45/3	45.00	9.00-18.00-18.00	30923		
VBFO 63	L = 670	D^Ø = 460 mm	DN300 PN16		
VBFO-63/1	49.50	9.00-9.00-18.00	30931		
VBFO-63/2	56.25	9.00-9.00-15.75-22.50	30932		
VBFO-63/3	63.00	11.25-13.50-15.75-22.50	30933		
VBFO 108	L = 1010	D^Ø = 460 mm	DN300 PN16		
VBFO-108/1	74.25	11.25-13.50-20.25-29.25	30941		
VBFO-108/2	81.00	11.25-15.75-22.50-31.50	30942		
VBFO-108/3	92.25	13.50-18.00-24.75-36.00	30943		
VBFO-108/4	108.00	15.75-20.25-29.25-42.75	30944		

The **SAN** tank heating battery type OTV is suitable for mounting on the suction pipe cover and for heating of the oil around the suction nozzle. Built-in thermostat 30-110°C and limiter 30-110°C in terminal box. Protection class: IP 54.

OTV 230 V 3x400 V 2 W/cm²

Type	Power kW mm	Insertion depth D mm ^Ø	Heating zone	Part no.
OTV 2	2.2	dependent	approx.300 x 200	30022
OTV 4	4.8	of	approx.300 x 250	30048
OTV 6	6.6	tank diameter	approx.300 x 250	30066



TYPE OTV

The **SAN** oil pre-heater type OB is a horizontally situated flow heater especially developed for heating of fuel-oils. Type OB is delivered as an insulated vessel with galvanized cladding and fixture, in- and outlet connectors with DS-flanges, with normal tight terminal box with built-in limiter, PG gland.

OIL PRE-HEATER OB 3 x 400 V

Type	Power kW	Group division kW	Part no.
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OB 27	L = 970 mm	D ^Ø = 340 mm	Volume = 20 l
OB 27/1	6.75	2.25 - 4.50	30905
OB 27/2	11.25	4.50 - 6.75	30906
OB 27/3	18.00	4.50 - 6.75 - 6.75	30907
OB 27/4	22.50	6.75 - 6.75 - 9.00	30908
OB 27/5	27.00	6.75 - 9.00 - 11.25	30909

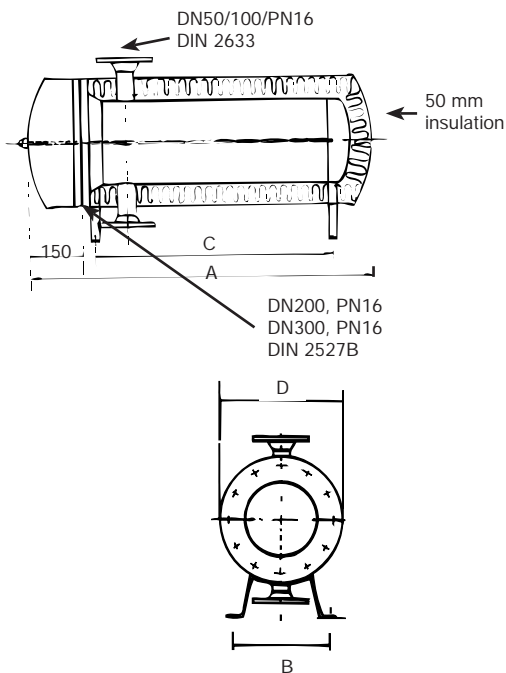
OB 45	L = 1300 mm	D ^Ø = 340 mm	Volume = 30 l
OB 45/1	31.50	4.50 - 9.00 - 18.00	30917
OB 45/2	38.25	6.75 - 13.50 - 18.00	30918
OB 45/3	45.00	9.00 - 18.00 - 18.00	30919

OB 63	L = 970 mm	D ^Ø = 460 mm	Volume = 45 l
OB 63/1	49.50	9.00 - 9.00 - 13.50 - 18.00	30927
OB 63/2	56.25	9.00 - 9.00 - 15.75 - 22.50	30928
OB 63/3	63.00	11.25 - 13.50 - 15.75 - 22.50	30929

OB 108	L = 1300 mm	D ^Ø = 460 mm	Volume = 70 l
OB 108/1	74.25	11.25 - 13.50 - 20.25 - 29.25	30936
OB 108/2	81.00	11.25 - 15.75 - 22.50 - 31.50	30937
OB 108/3	92.25	13.50 - 18.00 - 24.75 - 36.00	30938
OB 108/4	108.00	15.75 - 20.25 - 29.25 - 42.75	30939

Higher power upon request.

OIL PRE-HEATER



mm	A	B	C	D
OB 27	970	270	550	340
OB 45	1300	270	950	340
OB 63	970	400	550	460
OB 108	1300	400	950	460

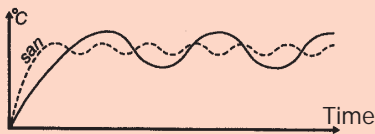
- this is the reason why letting SAN change tough, heavy fuel oil into a perfect pulverized cloud of dust gives you a better economy.

The SAN oil pre-heating system ensures the most economic heating of heavy fuel oil, functioning like the expensive gas fuel oil.

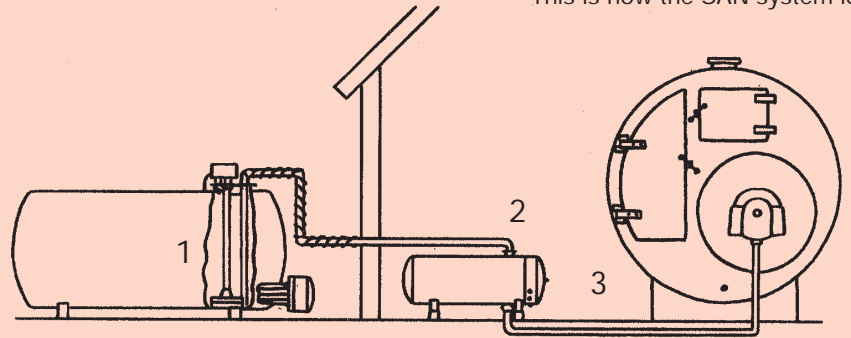
The SAN oil pre-heating system heats the oil cheaper than other systems.

The SAN-system uses new developed heating elements with a bigger heating effect than the "heavy" ceramic elements.

This ensures a faster heating of the oil - and a more stable temperature around 75°C/130°C, which is the ideal operating temperature.



This is how the SAN system looks



①

Immersion element or heating battery, which pre-heats the oil, enabling it to be pumped up. The oil is heated from approx. 10°C to approx. 50°C, where the heavy fuel oil becomes light fluid.

②

Heating cable
The thermostat adjusted silicone heating cable prevents a possible heat loss during the conveyance to the actual pre-heater.

③

Pre-heater
The oil has a temperature of approx. 50°C. The pre-heater brings the temperature to approx. 75°C/130°C, dependant of burner type. This ensures an unproblematic pulverization in the burner.

GLUE HEATER COLLOTHERM[®] 480



COLLOTHERM[®] is an electrical heating system for optimization of the gluing characteristics and use of the cold glue. The system is thermostat controlled 0-40°C and has a built-in limiter.

Sensor: type Pt 100.

Can with advantage be mounted on all labelling machines which uses cold glue.

Weight : 5 kg
Max. op. pressure: 10 bar
Power : 480 W
Protection class : IP 65.

COLLOTHERM[®] COMPLETE

230 V

Flow heater with 2 off 3/4" snap couplings
0-40°C, type TR 4004 ST, 3/4" x 2 m connection
hose^owith hose terminals, 2 off M8 x 80 mounting
screws with nut and 2.5 m connection cable.

Part no.

8520002

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- Flow Heaters
- Air Duct Heaters
- High-voltage
- Resistors
- Controllers



With more than 50 years of experience SAN Electro Heat's most valuable asset is special knowhow about design, product development and manufacturing of professional electrical heating equipment for industrial use.

The company is geared to deliver 100% customized products, and thus functions both as a catalyst for a development project and as supplier of the final product. At the same time we insure and maintain the required quality level, mechanical and electrical dimensioning, approvals and documentation.

